What is claimed is:

1. A recombinant construct, comprising as operably linked components in the 5' to 3' direction, a member selected from the group consisting of:

a seed-specific promoter or a promoter functional in a plant plastid, a DNA sequence encoding a 3-hydroxysteroid oxidase enzyme, and a transcription termination signal sequence;

a seed-specific promoter or a promoter functional in a plant plastid, a DNA sequence encoding a steroid 5α- reductase enzyme, and a transcription termination signal sequence;

a seed-specific promoter or a promoter functional in a plant plastid, a DNA sequence encoding a 3-hydroxy-3-methylglutaryl-CoA reductase enzyme, and a transcription termination signal sequence;

a seed-specific promoter or a promoter functional in a plant plastid, a DNA sequence encoding a sterol methyl transferase enzyme, and a transcription termination signal sequence;

a seed-specific promoter or a promoter functional in plant plastid, a DNA sequence encoding a sterol acyltransferase enzyme, and a transcription termination signal sequence; and

a seed-specific promoter or a promoter functional in a plant plastid, a DNA sequence encoding an S-adenosylmethionine-dependent γ-tocopherol methyltransferase enzyme, and a transcription termination signal sequence.

2. The recombinant construct of claim 1, which, when said promoter is a seed-specific promoter, further comprises a transit peptide coding region capable of directing transport of said enzyme into a plastid, operatively linked to said DNA sequence.

3. The recombinant construct of claim 1, which, when said promoter is a promoter functional in a plant plastid, further comprises:
a gene encoding a selectable marker for selection of plant cells comprising a plastid expressing said marker, and
DNA regions of homology to the genome of said plastid, wherein said regions of homology flank said promoter functional in a plant plastid, said DNA sequence, said transcription termination signal sequence, and said gene encoding a selectable marker.

4. The recombinant construct of claim 1, which, when said promoter is a promoter functional in a plant plastid, further comprises a ribosome binding site joined to said plastid promoter.

5. The recombinant construct of claim 4, wherein said ribosome binding site is obtainable from a leader sequence selected from the group consisting of a site derived from a plastid, bacterial, or bacteriophage leader sequence.

6. The recombinant construct of claim 5, wherein said ribosome binding site is selected from the group consisting of the binding site of the gene 10 leader and the rbcLRBS site.

7. A recombinant vector comprising the recombinant construct of claim 1.

8 The recombinant vector of claim 7, wherein said vector is a plant expression vector.

9. A transformed host cell comprising the recombinant construct of claim 1.

10. The transformed host cell of claim 9, wherein said host cell is a plant cell.

11. A plant comprising at least one transformed host cell of claim 10.

12. A seed comprising at least one transformed host cell of claim 10.

13. A plant, the genome of which comprises introduced DNA selected from the group consisting of:

DNA encoding a 3-hydroxysteroid oxidase enzyme, wherein said introduced DNA is operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said introduced DNA, and wherein seeds of said plant contain an elevated level of sitostanol, at least one sitostanol ester, or a mixture thereof, compared to seeds of an otherwise identical plant, the genome of which does not comprise said introduced DNA;

DNA encoding a steroid 5α-reductase enzyme, wherein said introduced DNA is operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said introduced DNA, and wherein seeds of said plant contain an elevated level of sitostanol, at least one sitostanol ester, or a mixture thereof, compared to seeds of an otherwise identical plant, the genome of which does not comprise said introduced DNA;

DNAs encoding a 3-hydroxysteroid oxidase enzyme and a steroid 5α-reductase enzyme, wherein said introduced DNAs are operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said introduced DNAs, and wherein seeds of said plant contain an elevated level of sitostanol, at least one sitostanol ester, or a mixture thereof, compared to seeds of an otherwise identical plant, the genome of which does not comprise said introduced DNAs;

DNAs encoding a 3-hydroxysteroid oxidase enzyme and a tocopherol biosynthetic enzyme, wherein said introduced DNAs are operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said introduced DNAs, and wherein seeds of said plant contain an elevated level of sitostanol, at least one sitostanol ester, or a mixture thereof, and at least one tocopherol compound, compared

to seeds of an otherwise identical plant, the genome of which does not comprise said introduced DNAs;

DNAs encoding a steroid 5α-reductase enzyme and a tocopherol biosynthetic enzyme, wherein said introduced DNAs are operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said introduced DNAs, and wherein seeds of said plant contain an elevated level of sitostanol, at least one sitostanol ester, or a mixture thereof, and at least one tocopherol compound, compared to seeds of an otherwise identical plant, the genome of which does not comprise said introduced DNAs;

DNAs encoding a 3-hydroxysteroid oxidase enzyme, a steroid 5α-reductase enzyme, and a tocopherol biosynthetic enzyme, wherein said introduced DNAs are operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said introduced DNAs, and wherein seeds of said plant contain an elevated level of sitostanol, at least one sitostanol ester, or a mixture thereof, and at least one tocopherol compound, compared to seeds of an otherwise identical plant, the genome of which does not comprise said introduced DNAs;

DNA encoding a 3-hydroxy-3-methylglutaryl-CoA reductase enzyme, wherein said introduced DNA is operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said introduced DNA, and wherein seeds of said plant contain an elevated level of at least one sterol, at least one phytosterol, at least one phytosterol ester, at least one phytostanol, at least one phytostanol ester, or mixtures thereof, compared to seeds of an otherwise identical plant, the genome of which does not comprise said introduced DNA;

DNAs encoding a 3-hydroxysteroid oxidase enzyme and a 3-hydroxy-3-methylglutaryl-CoA reductase enzyme, wherein said introduced DNAs are operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said introduced DNAs, and wherein seeds of said plant contain an elevated level of at least one sterol, at least one phytosterol, at least one phytosterol ester, at least one phytostanol, at least one phytostanol ester, or mixtures thereof, compared to seeds of

an otherwise identical plant, the genome of which does not comprise said introduced DNAs;

DNAs encoding a steroid 5α-reductase enzyme and a 3-hydroxy-3-methylglutaryl-CoA reductase enzyme, wherein said introduced DNAs are operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said introduced DNAs, and wherein seeds of said plant contain an elevated level of at least one sterol, at least one phytosterol, at least one phytosterol ester, at least one phytostanol, at least one phytostanol ester, or mixtures thereof, compared to seeds of an otherwise identical plant, the genome of which does not comprise said introduced DNAs;

DNAs encoding a 3-hydroxysteroid oxidase enzyme, a steroid 5α-reductase enzyme, and a 3-hydroxy-3-methylglutaryl-CoA reductase enzyme, wherein said introduced DNAs are operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said introduced DNAs, and wherein seeds of said plant contain an elevated level of at least one sterol, at least one phytosterol, at least one phytosterol ester, at least one phytostanol, at least one phytostanol ester, or mixtures thereof, compared to seeds of an otherwise identical plant, the genome of which does not comprise said introduced DNAs;

DNAs encoding a 3-hydroxysteroid oxidase enzyme, a 3-hydroxy-3-methylglutaryl-CoA reductase enzyme, and a sterol methyltransferase enzyme, wherein said introduced DNAs are operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said introduced DNAs, and wherein seeds of said plant contain an elevated level of at least one sterol, at least one phytosterol, at least one phytosterol ester, at least one phytostanol, at least one phytostanol ester, or mixtures thereof, as well as a reduced level of campesterol, a campesterol ester, campestanol, a campestanol ester, or mixtures thereof, compared to seeds of an otherwise identical plant, the genome of which does not comprise said introduced DNAs;

DNAs encoding a steroid 5α-reductase enzyme, a 3-hydroxy-3-methylglutaryl-CoA reductase enzyme, and a sterol methyltransferase enzyme, wherein said introduced DNAs are operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said introduced DNAs, and wherein seeds of said plant contain an elevated level of at least one sterol, at least one phytosterol, at least one phytosterol ester, at least one phytostanol, at least one phytostanol ester, or mixtures thereof, as well as a reduced level of campesterol, a campesterol ester, campestanol, a campestanol ester, or mixtures thereof, compared to seeds of an otherwise identical plant, the genome of which does not comprise said introduced DNAs; and DNAs encoding a 3-hydroxysteroid oxidase enzyme, a steroid 5α-reductase enzyme, a 3-hydroxy-3-methylglutaryl-CoA reductase enzyme, and a sterol methyltransferase enzyme, wherein said introduced DNAs are operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said introduced DNAs, and wherein seeds of said plant contain an elevated level of at least one sterol, at least one phytosterol, at least one phytosterol ester, at least one phytostanol, at least one phytostanol ester, or mixtures thereof, as well as a reduced level of campesterol, a campesterol ester, campestanol, a campestanol ester, or mixtures thereof, compared to seeds of an otherwise identical plant, the genome of which does not comprise said introduced DNAs.

14. The plant of claim 13, wherein said genome further comprises introduced DNA encoding a sterol acyltransferase enzyme, wherein said introduced DNAs are operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said introduced DNAs, and wherein seeds of said plant contain an elevated level of at least one sterol when DNA encoding a 3-hydroxy-3-methylglutaryl-CoA reductase enzyme is introduced into said plant, at least one phytosterol, at least one phytosterol ester, at least one phytostanol, at least one phytostanol ester, or mixtures thereof, compared to seeds of an otherwise identical plant, the genome of which does not comprise said introduced DNAs.

15. The plant of claim 13, wherein said genome further comprises introduced DNA encoding an S-adenosylmethionine-dependent γ-tocopherol methyltransferase enzyme, wherein said introduced DNAs are operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said introduced DNAs, and wherein seeds of said plant contain an elevated level of at least one sterol when DNA encoding a 3-hydroxy-3-methylglutaryl-CoA reductase enzyme is introduced into said plant, at least one phytosterol, at least one phytosterol ester, at least one phytostanol, at least one phytostanol ester, or mixtures thereof, as well as an elevated level of α-tocopherol, compared to seeds of an otherwise identical plant, the genome of which does not comprise said introduced DNAs.

16. The plant of claim 14, wherein said genome further comprises introduced DNA encoding an S-adenosylmethionine-dependent γ-tocopherol methyltransferase enzyme, wherein said introduced DNAs are operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said introduced DNAs, and wherein seeds of said plant contain an elevated level of at least one sterol when DNA encoding a 3-hydroxy-3-methylglutaryl-CoA reductase enzyme is introduced into said plant, at least one phytosterol, at least one phytosterol ester, at least one phytostanol, at least one phytostanol ester, or mixtures thereof, as well as an elevated level of α-tocopherol, compared to seeds of an otherwise identical plant, the genome of which does not comprise said introduced DNAs.

17. The plant of claim 13, 14, 15 or 16, wherein the seed of said plant contains at least one of brassicastanol, brassicastanol ester, stigmastanol or stigmastanol ester.

18. The plant of claim 13, 14, 15 or 16, wherein said regulatory signals cause seed-specific expression of said introduced DNAs, and wherein each of said

introduced DNAs is further operatively linked to a transit peptide coding region capable of directing transport of said enzyme encoded thereby into a plastid.

19. The plant of claim 13, 14, 15 or 16, wherein said regulatory signals cause plastid-specific expression of said introduced DNAs, and wherein said genome is a plastid genome.

20. A plant, the genome of which contains at least one introduced DNA sequence encoding a peptide, polypeptide, or protein that affects the biosynthesis and accumulation of at least one sterol, at least one phytosterol, at least one phytosterol ester, at least one phytostanol, at least one phytostanol ester, or mixtures thereof, wherein said introduced DNA is operably linked to regulatory signals that cause seed-specific or plastid-specific expression of said introduced DNA, and wherein said plant produces seed having an elevated level of at least one sterol, at least one phytosterol, at least one phytosterol ester, at least one phytostanol, at least one phytostanol ester, or mixtures thereof, compared to a corresponding transgenic or non-transgenic plant that does not contain said introduced DNA.

21. The plant of claim 20, wherein said at least one phytostanol is sitostanol, and said at least one phytostanol ester is a sitostanol ester.

22. The plant of claim 20, wherein said seed contains an elevated level of α-tocopherol.

23. The plant of claim 20, wherein said seed also contains a compound selected from the group consisting of brassicastanol, at least one brassicastanol ester, stigmastanol, at least one stigmastanol ester, and mixtures thereof.

24. A plant that produces seed having an elevated level of a compound selected from the group consisting of sitosterol, at least one sitosterol ester, sitostanol, at least one sitostanol ester, and mixtures thereof, as well as a reduced level of a compound selected from the group consisting of campesterol, a campesterol ester, brassicasterol, a brassicasterol ester, campestanol, a campestanol ester, brassicastanol, brassicastanol ester, and mixtures thereof, compared to a corresponding transgenic or non-transgenic plant that does not contain introduced DNA encoding a peptide, polypeptide, or protein that affects phytosterol or phytostanol biosynthesis and accumulation in said corresponding plant.

25. The plant of claim 24, wherein said seed contains an elevated level of α-tocopherol.

26. A plant that produces seed having a reduced level of a compound selected from the group consisting of campesterol, a campesterol ester, brassicasterol, a brassicasterol ester, campestanol, a campestanol ester, brassicastanol, a brassicastanol ester, and mixtures thereof, compared to a corresponding transgenic or non-transgenic plant that does not contain introduced DNA encoding a peptide, polypeptide, or protein that affects phytosterol or phytostanol biosynthesis and accumulation in said corresponding plant.

27. The plant of claim 26, wherein said seed contains an elevated level of α-tocopherol.

28. A composition comprising a phytostanol, a phytostanol ester or mixtures thereof obtained from a plant of claim 13, 20, 24 or 26..

29. Oil containing a compound selected from the group consisting of at least one sterol, at least one phytosterol, at least one phytosterol ester, at least one phytostanol,

at least one phytostanol ester, and mixtures thereof, extracted from seed of a plant according to claim 13, 20, 24, or 26.

30. A food, food ingredient or food composition, comprising oil of claim 29.

31. A pharmaceutical composition, comprising a cholesterol-lowering effective amount of oil according to claim 29 and a pharmaceutically acceptable carrier, excipient, or diluent.

32. A method for lowering the plasma concentration of low density lipoprotein cholesterol, comprising orally administering to a human or animal subject a low density lipoprotein concentration lowering amount of a composition of claim 31.

33. A method for treating or preventing an elevated plasma concentration of low density lipoprotein cholesterol, comprising orally administering to a human or animal subject an effective amount of a composition of claim 31.

34. A seed of a plant according to claim 13, 20, 24 or 26.

35. Progeny of a plant according to claim 13, 20, 24 or 26..

36. A method of producing a plant that accumulates an elevated level of a compound selected from the group consisting of sitosterol, at least one sitosterol ester, sitostanol, at least one sitostanol ester, and mixtures thereof, in seed of said plant compared to seed of a corresponding plant comprising no introduced DNA encoding a peptide, polypeptide, or protein that affects the biosynthesis and accumulation of a phytosterol or phytosterol ester, or a phytostanol or phytostanol ester, comprising sexually crossing a plant of claim 13, 20, 24 or 26 with said corresponding plant.

37. A plant produced by the method of claim 36.

38. A method of producing oil containing sitostanol or a sitostanol ester, comprising culturing cells from a plant of claim 13, 20, 24 or 26 for a time and under conditions conductive to the production of oil contain sitostanol or sitostanol ester, and recovering said oil containing sitostanol or a sitostanol ester produced thereby.

39. A method for producing a sitostanol or a sitostanol ester comprising culturing cells from a plant of claim 13, 20, 24 or 26 for a time and under conditions conductive to the production of sitostanol or a sitostanol ester, and recovering said sitostanol or sitostanol ester produced thereby.

40. A plant of claim 13, 20, 24 or 26, wherein said plant is an apomicitic plant.

41. A seed resulting from a cross of the plant of claim 40 with a nurse cultivar.

42. A method of producing a compound selected from the group consisting of at least one phytosterol, at least one phytosterol ester, at least one phytostanol, at least one phytostanol ester, and mixtures thereof, in a seed, comprising obtaining a transformed plant that produces said seed, wherein said plant has and expresses in its genome DNA selected from the group consisting of:

DNA encoding a 3-hydroxysteroid oxidase enzyme, wherein said DNA is operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said DNA;

DNA encoding a steroid 5α-reductase enzyme, wherein DNA is operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said DNA;

DNAs encoding a 3-hydroxysteroid oxidase enzyme and a steroid 5α-reductase enzyme, wherein said DNAs are operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said DNAs;

DNAs encoding a 3-hydroxysteroid oxidase enzyme and a tocopherol biosynthetic enzyme, wherein said DNAs are operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said DNAs;

DNAs encoding a steroid 5α-reductase enzyme and a tocopherol biosynthetic enzyme, wherein said DNAs are operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said DNAs;

DNAs encoding a 3-hydroxysteroid oxidase enzyme, a steroid 5α-reductase enzyme, and a tocopherol biosynthetic enzyme, wherein said DNAs are operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said DNAs;

DNA encoding a 3-hydroxy-3-methylglutaryl-CoA reductase enzyme, wherein said DNA is operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said DNA;

DNAs encoding a 3-hydroxysteroid oxidase enzyme and a 3-hydroxy-3-methylglutaryl-CoA reductase enzyme, wherein said DNAs are operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said DNAs;

DNAs encoding a steroid 5α-reductase enzyme and a 3-hydroxy-3-methylglutaryl-CoA reductase enzyme, wherein said DNAs are operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said DNAs;

DNAs encoding a 3-hydroxysteroid oxidase enzyme, a steroid 5α-reductase enzyme, and a 3-hydroxy-3-methylglutaryl-CoA reductase enzyme, wherein said DNAs are operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said DNAs;

DNAs encoding a 3-hydroxysteroid oxidase enzyme, a 3-hydroxy-3-methylglutaryl-CoA reductase enzyme, and a sterol methyltransferase enzyme, wherein said DNAs are operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said DNAs;

DNAs encoding a steroid 5α-reductase enzyme, a 3-hydroxy-3-methylglutaryl-CoA reductase enzyme, and a sterol methyltransferase enzyme, wherein said DNAs are operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said DNAs; and

DNAs encoding a 3-hydroxysteroid oxidase enzyme, a steroid 5α-reductase enzyme, a 3-hydroxy-3-methylglutaryl-CoA reductase enzyme, and a sterol methyltransferase enzyme, wherein said DNAs are operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said DNAs; and

recovering said at least one phytosterol, at least one phytosterol ester, at least one phytostanol, at least one phytostanol ester, or mixtures thereof.

43. The method of claim 42, wherein said plant further has and expresses in its genome DNA encoding a sterol acyltransferase enzyme operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said acyltransferase enzyme-encoding DNA.

44. The method of claim 42, wherein said plant further has and expresses in its genome DNA encoding an S-adenosylmethionine-dependent γ-tocopherol methyltransferase enzyme operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said DNA methyltransferase enzyme-encoding DNA.

45. The method of claim 43, wherein said plant further has and expresses in its genome DNA encoding an S-adenosylmethionine-dependent γ-tocopherol methyltransferase enzyme operatively linked to regulatory signals that cause seed-specific or plastid-specific expression of said DNA methyltransferase enzyme-encoding DNA.

46. The method of claim 42, 43, 44 or 45, wherein when said regulatory signals cause seed-specific expression of said enzyme-encoding DNAs, each of said enzyme-encoding DNAs is further operatively linked to a transit peptide coding region capable of directing transport of said enzyme encoded thereby into a plastid.

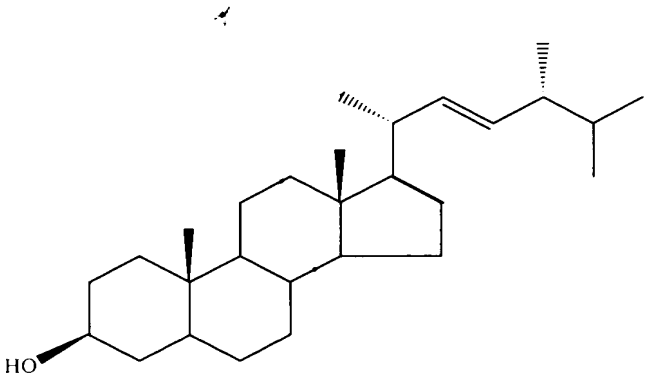
47. The method of claim 42, 43, 44 or 45 wherein, when said regulatory signals cause seed-specific expression of said enzyme-encoding DNAs, said genome is the nuclear genome.

48. The method of claim 42, 43, 44 or 45 wherein, when said regulatory signals cause plastid-specific expression of said enzyme-encoding DNAs, said genome is a plastid genome.

49. A composition comprising a sitostanol ester produced by the method of claim 42, 43, 44 or 45.

50. The composition of claim 49, wherein an esterifying fatty acid has 2 to 22 carbon atoms in the main chain.

51. Brassicastanol, having the structure:



Brassicastanol

52. A ester of brassicastanol of claim 51, wherein the hydrogen of the hydroxyl group at C-3 is replaced with a straight or branched chain fatty acid having two to twenty-two carbon atoms in the main chain.

53. An isolated DNA molecule, having a nucleotide sequence selected from the group consisting of:

(a) SEQ ID NO: 2, or the complement thereof;

(b) a nucleotide sequence that hybridizes to said nucleotide sequence of (a) under a wash stringency equivalent to 0.5X SSC to 2X SSC, 0.1% SDS, at 55-65°C, and which encodes a polypeptide having steroid 5α-reductase enzymatic activity substantially similar to that of *Arabidopsis thaliana* steroid 5α-reductase;

(c) a nucleotide sequence encoding the same genetic information as said nucleotide sequence of (a), but which is degenerate in accordance with the degeneracy of the genetic code; and

(d) a nucleotide sequence encoding the same genetic information as said nucleotide sequence of (b), but which is degenerate in accordance with the degeneracy of the genetic code.

54. An isolated DNA molecule, having a nucleotide sequence selected from the group consisting of:

(a) SEQ ID NO: 4, or the complement thereof;

(b) a nucleotide sequence that hybridizes to said nucleotide sequence of (a) under a wash stringency equivalent to 0.5X SSC to 2X SSC, 0.1% SDS, at 55-65°C, and which encodes a polypeptide having steroid 5α-reductase enzymatic activity substantially similar to that of *Zea mays* steroid 5α-reductase;

(c) a nucleotide sequence encoding the same genetic information as said nucleotide sequence of (a), but which is degenerate in accordance with the degeneracy of the genetic code; and

(d) a nucleotide sequence encoding the same genetic information as said nucleotide sequence of (b), but which is degenerate in accordance with the degeneracy of the genetic code.

55. An isolated DNA molecule that encodes a steroid 5α-reductase enzyme or fragment thereof, comprising a nucleic acid sequence selected from the group consisting of:

(a) SEQ ID NO: 6, or the complement thereof;

(b) a nucleotide sequence that hybridizes to said nucleotide sequence of (a) under a wash stringency equivalent to 0.5X SSC to 2X SSC, 0.1% SDS, at 55-65°C, and which encodes a polypeptide having steroid 5α-reductase enzymatic activity substantially similar to that of *Glycine max* steroid 5α-reductase;

(c) a nucleotide sequence encoding the same genetic information as said nucleotide sequence of (a), but which is degenerate in accordance with the degeneracy of the genetic code; and

(d) a nucleotide sequence encoding the same genetic information as said nucleotide sequence of (b), but which is degenerate in accordance with the degeneracy of the genetic code.

56. An isolated DNA molecule that encodes a steroid 5α-reductase enzyme or fragment thereof, comprising a nucleic acid sequence selected from the group consisting of:

(a) SEQ ID NO: 8, or the complement thereof;

(b) a nucleotide sequence that hybridizes to said complement of (a) under a wash stringency equivalent to 0.5X SSC to 2X SSC, 0.1% SDS, at 55-65°C, and which encodes a polypeptide having enzymatic activity similar to that of *Glycine max* steroid 5α-reductase;

(c) a nucleotide sequence encoding the same genetic information as said nucleotide sequence of (a), but which is degenerate in accordance with the degeneracy of the genetic code; and

(d) a nucleotide sequence encoding the same genetic information as said nucleotide sequence of (b), but which is degenerate in accordance with the degeneracy of the genetic code.

57. A recombinant construct, comprising as operably linked components in the 5' to 3' direction, a seed-specific promoter or a promoter functional in a plant plastid, an isolated DNA molecule of claim 53, 54, 55 or 56, and a transcription termination signal sequence.

58. The recombinant construct of claim 57, which, when said promoter is a seed-specific promoter, further comprises a transit peptide coding region capable of directing transport of said steroid 5α-reductase into a plastid, operatively linked to said isolated DNA molecule.

59. The recombinant construct of claim 57, which, when said promoter is a promoter functional in a plant plastid, further comprises:
a gene encoding a selectable marker for selection of plant cells comprising a plastid expressing said marker, and

DNA regions of homology to the genome of said plastid, wherein said regions of homology flank said promoter functional in a plant plastid, said DNA sequence, said transcription termination signal sequence, and said gene encoding a selectable marker.

60. The recombinant construct of claim 57, which, when said promoter is a promoter functional in a plant plastid, further comprises a ribosome binding site joined to said plastid promoter.

61. The recombinant construct of claim 60, wherein said ribosome binding site is obtainable from a leader sequence selected from the group consisting of a site derived from a plastid, bacterial, or bacteriophage leader sequence.

62. The recombinant construct of claim 61, wherein said ribosome binding site is selected from the group consisting of the binding site of the gene 10 leader and the rbcLRBS site.

63. A recombinant vector comprising said recombinant construct of claim 57.

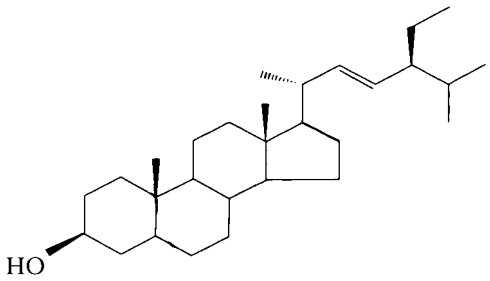
64. The recombinant vector of claim 63, which is a plant expression vector.

65. A transformed host cell, comprising said recombinant construct of claim 57.

66. The transformed host cell of claim 65, wherein said host cell is a plant cell.

67. A method of producing a steroid 5α-reductase, comprising culturing a transformed host cell of claim 65 for a time and under conditions conductive to the production of said steroid 5 α-reductase, and recovering said 5 α-reductase produced thereby.

68. Stigmastanol, having the structure:



Stigmastanol

69. An ester of stigmastanol of claim 68, wherein the hydrogen of the hydroxyl group at C-3 of stigmastanol is replaced with a straight or branched chain fatty acid having two to twenty two carbon atoms in the main chain.

70. A uniform population of plants according to claim 13, 20, 24 or 26.